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RABIN & BERDO

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With Examiner/Clerk Ms Parul Gupta Phone 571 272 5260

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DECLARATION OF TRANSLATOR

I Tai-Jung LU of TOP TEAM INTERNATIONAL PATENT & TRADEMARK OFFICE located at 3rd Fl., No. 279, Sec. 4, Hsin-Yi Rd., Taipei, Taiwan, R.O.C, translator of the provisional application for patent (serial no. 60/442,913) do hereby declare that I am literate in both Chinese and English language, and I certify that the accompanying English-language document is, to the best of my knowledge, a true and accurate translation of the originally-filed Chinese-language provisional application for patent (serial no. 60/442,913).

Signature Tai-jung Lu Date 2007.3.2
Tai-Jung LU

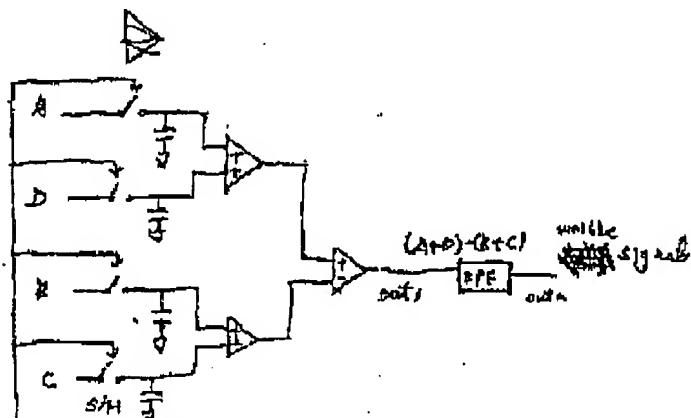
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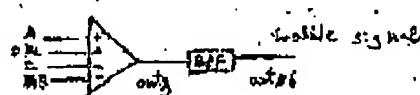
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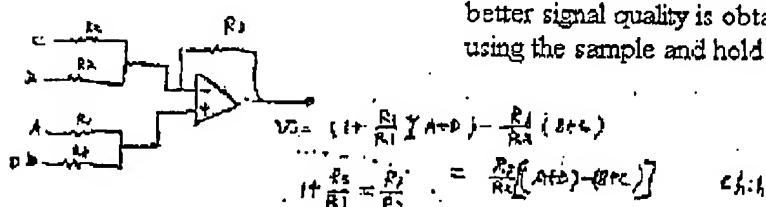
Prior art



Conventional method: as shown above, the sample and hold device is required to avoid large laser power during data writing. However, the wobble signal is cut during operation of the sample and hold device, deteriorating the signal quality after filtered by BPF.



The figure at the left side shows subtracting signal by $(A+D)-(B+C)$. The amplitudes of signals A and B, and that of C and D are much closed. Thus, only wobble signal is left by subtracting signal B from signal A and subtracting signal D from signal C. In addition, the amplitude of the wobble signal will not causing the circuit saturation. Thus, better signal quality is obtained without using the sample and hold device.

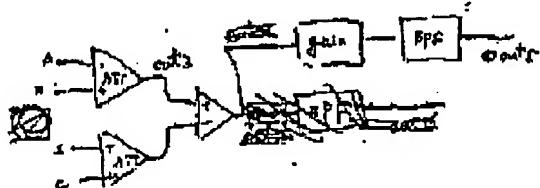


$$V_{o1} = \left(1 + \frac{R_2}{R_1} \right) V_{A+D} - \frac{R_4}{R_3} (V_{B+C})$$

$$\text{if } \frac{R_2}{R_1} = \frac{R_4}{R_3} \quad = \frac{R_2}{R_3} [V_{A+D} - V_{B+C}] \quad \text{ch:1}$$

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As shown above, signals A, B, C, and D are attenuated using attenuators before providing to the circuit. Thus, signal amplitudes are similar to data reading operation. Next, the wobble signal is obtained at out3 by subtracting the attenuated signal B from the attenuated signal A and subtracting the attenuated signal D from the attenuated signal C. Finally, the wobble signal is gained to an original power level. Thus, better signal quality is also obtained without using the sample and hold device.

$$\begin{aligned}
 & \text{Top circuit: } V_{T1} = -\frac{R_2}{R_1}(A+B) \\
 & \text{Middle circuit: } V_{B1} = -\frac{R_2}{R_1}(B+C) \\
 & \text{Bottom circuit: } V_{D1} = -\frac{R_2}{R_1}(-\frac{R_2}{R_1}(A+B)) \\
 & \quad + (-\frac{R_2}{R_1}(B+C))(\frac{R_2}{R_1}+1) \\
 & \quad \therefore Q_1 + \frac{R_2}{R_1} = \frac{R_2}{R_1}, \quad \therefore Q_1 = \frac{R_2}{R_1} \cdot \frac{R_1}{R_1} [A+B] - [B+C]
 \end{aligned}$$

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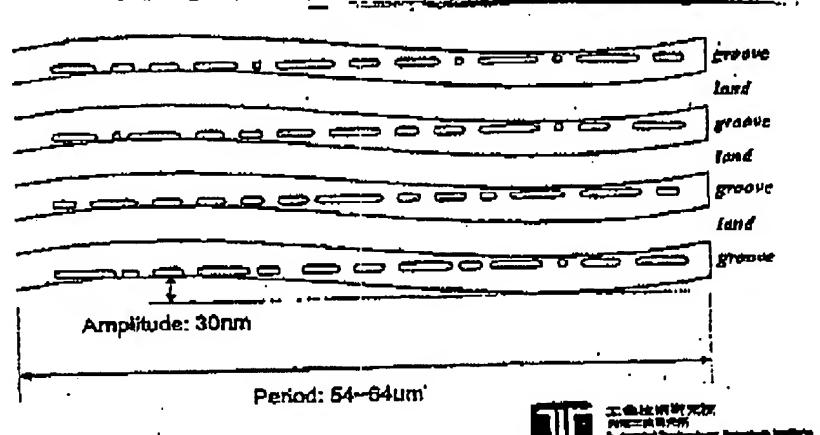
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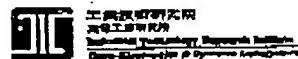
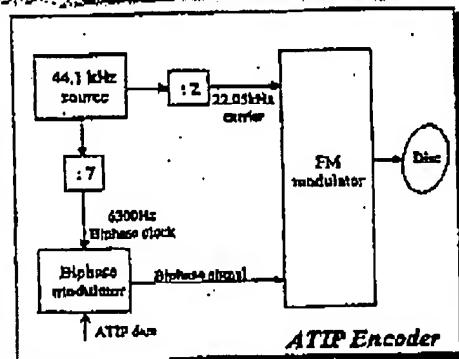
Pre-groove and Wobble



ATIP Modulation

Disc	Radius Track Wobble
Carrier frequency	22.05kHz
Analog modulation	FM
Digital modulation	Biphase-Mark
Synchronization	Biphase Modulation
Data bit-rate	31.20 bits/sec
Frame length	42 bits
Frame frequency	75Hz
Data contents	3 bytes(MV, SMC, PRAWD)
Error protection	14 bits CRC

Carrier frequency	22.05kHz
Deviation	10% ± 10%
Chill time per slot	5ms/track
Data/Ripple THD	<-40 dB



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